



November 9, 2020

File: 20-78 Lot 2

James Wilson
1351 Fernwood Street
Pemberton, BC
V0N 2L0

Dear Mr. Wilson:

RE: Potable Water Supply for Proposed Lot 2 of Remainder Lot 2 District Lot 1251 Birken, BC

As per your request, Arden Consulting Engineers Ltd. (ACE) has completed a flow test on the drilled well (BC Well ID Plate # 61575) installed to provide potable water for the proposed two lot subdivision. The testing was completed to evaluate the quantity of the water supply. The well was drilled on October 1, 2020.

The flow test was conducted on October 27, 2020. The well was completed with 150mm diameter casing to a depth of 53.6m with a #40 slot screen installed from 51.5m to 53.6m. The well was also completed with a surface seal consisting of bentonite chips to a depth of 5.5m below ground surface and the well head was extended to a height of 750mm above grade in accordance with the *Groundwater Protection Regulation*. Water level readings during the flow test were obtained using an electronic data logger with a pressure transducer and were recorded at 1 minute intervals as well as an electric water meter tape. The pump rate was limited using a Dole Valve and verified by using repeated timed measurements to fill a graduated reservoir.

WATER QUANTITY

A temporary well pump was installed at a depth of 50m and used to pump water from the well. The well was initially pumped at a rate of 24 Lpm for a duration of 24 minutes, followed by an increase to 29 Lpm for an additional 13 minutes followed by an increase to 31 Lpm for approximately 6 hours. It is noted that 31 Lpm pumping rate represented the maximum discharge rate of the installed temporary pump.

The following data was collected during the test:

- | | |
|--|-------------|
| • Depth to bottom of well | 53.6m |
| • Depth to Water (from top of casing) | 30.7m |
| • Depth to pump | 50m |
| • Available drawdown at the time of the test | 22.9m |
| • Average Pump Rate | 31 Lpm |
| • Pump Duration | 390 minutes |
| • Total volume of water extracted | 11,300 L |

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- Drawdown during pump test 0.13m

The Squamish Lillooet Regional District (SLRD) requires a water supply for single family residences to be capable of providing a minimum quantity of 500 gallons 2,273 Lpd.

The theoretical long-term yield is determined by extrapolating the drawdown of the well at 100 days using the shape of the drawdown curve at the later stages of pumping. For the purposes of this pumping test, the drawdown of the well at 100 days was estimated based on the 29 Lpm pumping rate. Based on the data collected during the pump test, the drawdown in the well at 100 days is estimated to be 1m at the 29 Lpm pumping rate. The long-term yield is estimated using the specific capacity of the well calculated from the pump test, multiplied by the available drawdown and applying a 30% factor of safety as shown below:

$$\begin{aligned}\text{Long-term yield} &= \text{specific capacity} \times \text{available drawdown} \times 0.70 \\ &= 1,900 \text{ Lpm} \quad (2,800,000 \text{ Lpd})\end{aligned}$$

where: Specific capacity – 155 Lpm per meter drawdown

The available drawdown was estimated to be 17.9m assuming a 2 m drop in the seasonal water level.

Based on the results of the pumping test, it is our opinion that the well is capable of producing a sustained yield in excess of 2,273 Lpd.

Although the theoretical yield was calculated to be 1,900 Lpm, the actual maximum safe yield should be limited to 31 Lpm which is equivalent to the flow rate tested. Should the owner wish to require the well to be rated at a higher flow rate, the well should be first flow tested at the desired higher rate. It is noted that the drill log estimates the well yield at 300 Lpm.

CLOSURE

This letter has been prepared by ACE exclusively for the Wilson's and is intended to provide an assessment of the subject water well's ability to meet the requirements of the SLRD guidelines for water supply. The conclusions made in this report reflect ACE's best judgement in light of the information available at the time of testing. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. ACE accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions based on this letter.

Should the Wilson's submit this report to the SLRD, the SLRD is authorized to rely on the results within the limitations of the following paragraphs for the purpose of determining whether the Wilson's have fulfilled their obligations with respect to provision of a suitable water supply for subdivision.

The findings and conclusions documented in this report have been prepared for specific application to this site and have been developed in a manner consistent with that level of care normally exercised by groundwater and hydrogeological professionals currently practicing under similar conditions in the area.



We trust that this provides the information you currently require. If you have any questions or require comment, please feel free to contact the undersigned.

Yours Truly,

ARDEN CONSULTING ENGINEERS LTD.

PER

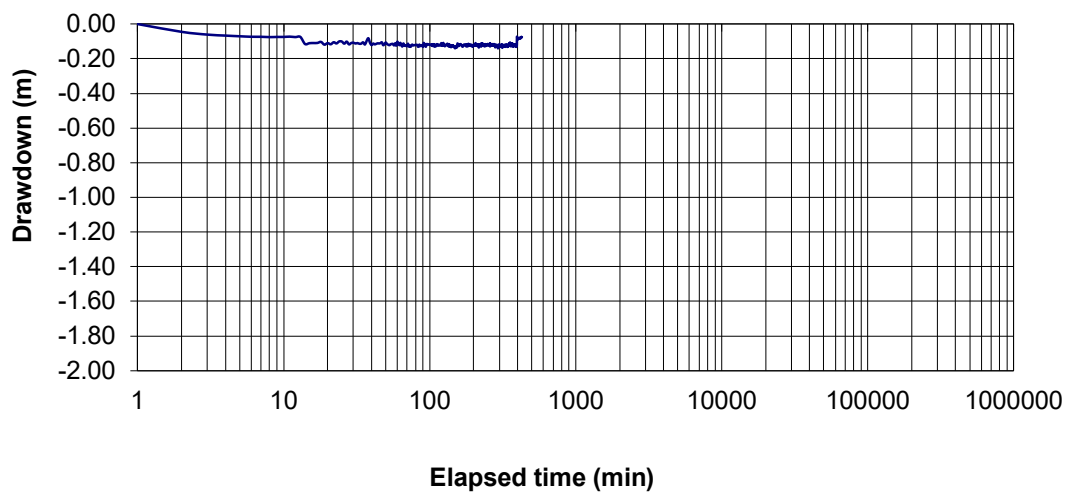
Rob Arden, P.Eng.

Encl: Drawdown and Recovery Pumping Curve
Well Log
Site Plan

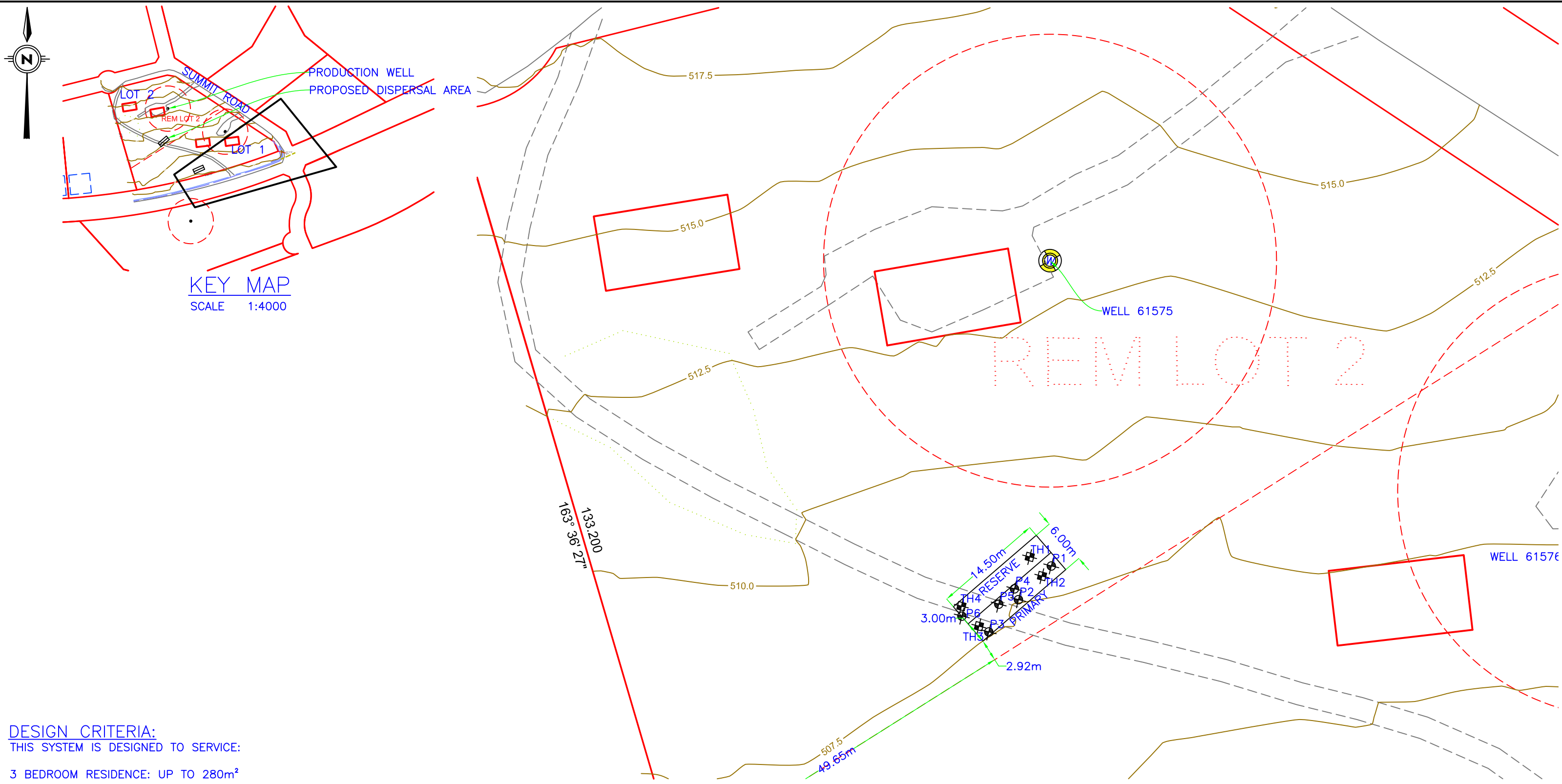


DRAWDOWN AND RECOVERY PUMP CURVE

Well Plate ID 61575 Drawdown vs Recovery - Pump rate 31 Lpm



WELL SHOULD BE PUMP TESTED FOR EXACT GPM

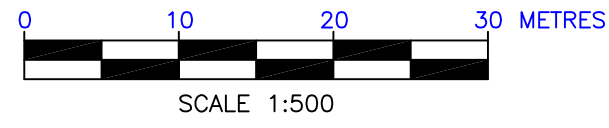


DESIGN CRITERIA:
THIS SYSTEM IS DESIGNED TO SERVICE:

3 BEDROOM RESIDENCE: UP TO 280m²

TOTAL DESIGN FLOW = 1300 LITERS PER DAY

- LEGEND
- LOCATION OF TEST PIT
 - LOCATION OF PERCOLATION TEST
 - WELL LOCATIONS



NOTE: ORIGINAL SEAL IN RED

SEAL	 ARDEN CONSULTING ENGINEERS LTD.	PROJECT LOT 2 DL 1252 MT. CURRIE				
		TITLE PROPOSED SEWAGE DISPOSAL SYSTEM				
	CLIENT: JAMES WILSON	DATE OF ISSUE NOV 11/20		PROJECT No. 20-78	DWG. No. 2 OF 2	REV. 00
		DWN BY: AC				

CANCEL PRINTS BEARING EARLIER NUMBER